

REMARKS

Claims 1-20 are pending and have been examined. Figure 2 has been objected to. Claims 1-20 were rejected under 35 U.S.C. 112, second paragraph. Claims 1, 4-5, 8, 12-13, 15-16, 18 and 20 were rejected under 35 U.S.C. 102(e) over U.S. Patent Publication US 2001/0027856 (“Okamoto”). Claims 1, 3-9, and 12-20 were rejected under 35 U.S.C. 103(a) over U.S. Patent 5,296,285 (“Babel”) in view of Okamoto. Claims 1 and 10 were rejected under 35 U.S.C. 103(a) over U.S. Patent 6,176,453 (“Long”) in view of Okamoto. Claims 1 and 11 were rejected under 35 U.S.C. 103(a) over U.S. Patent U.S. 4,666,760 (“Hasuda”) in view of Okamoto.

All of the claims have been amended. These amendments have not narrowed the scope of the claims and in most cases have actually broadened the claims.

In view of these amendments, and the remarks that follow, the Applicant respectfully requests reconsideration of the rejection of claims 1 through 20.

In paragraph 1 of the Office Action, Figure 2 was objected to. Attached hereto is amended Figure 2 to include the legend “Prior Art.” Applicant respectfully requests approval of this change and requests that the objection to the drawings be withdrawn as a result.

In paragraphs 2-4 of the Office Action, claims 1 through 20 were rejected under Section 112, second paragraph, as being indefinite. The Applicant has amended claims 1 and 13 to clarify that the composite material heat controller, which includes the base material and the phase change substance, is a separate and distinct component from the object and does not include the object or the surface thereof. The Applicant has also amended claims 1 and 13 to include the object or “relative terminology” as suggested in the Office Action. Applicant wishes to thank the Examiner for his helpful suggestion to improve the clarity of the claims. The Office Action notes in paragraph 4 that the term “several” claim 2 was objectionable. However, the term “several” was eliminating in Applicant’s last set of amendments. The

Applicant respectfully requests that the rejection of claims 1 through 20 under Section 112 be withdrawn.

In paragraphs 5-13 of the Office Action, claims 1, 4-5, 8, 12-13, 15-16, 18 and 20 were rejected as being anticipated by Okamoto. The Applicant respectfully traverses this rejection. For the purposes of this rejection, the Examiner interpreted the claims such that the base material could be the surface of the object itself.

As was noted previously, the Applicant has amended independent claims 1 and 13 to clarify that the composite material heat controller, which includes the base material and the phase-change substance, is separate and distinct from the object and the surface thereof. Thus, it is clear that the base material cannot be the surface of the object or the object itself.

Specifically, in claim 1, the base material is recited as “having a surface adapted to thermally contact a surface of said object”. Similarly, claim 13 recites “attaching said second surface of said base material to said object.” As a result, the rejection of claims 1 and 13 should be withdrawn. Additionally, since claims 4-5, 8, and 12 depend from claim 1, and claims 15-16 and 18 depend from claim 13, the rejection of claim 4-5, 8, 12, 15-16, and 18 should also be withdrawn.

In paragraphs 15-33, claims 1, 3-9, and 12-20 were rejected as being obvious over Babel in view of Okamoto. In paragraphs 34-42, claims 1 and 10 were rejected as being obvious over Long in view of Okamoto. The Applicant respectfully traverses these rejections.

As described in each of the Babel and Long references and as reiterated in the Office Action, Babel and Long each teach paint-like coatings which are applied to the surface of an object. Applicant respectfully submits that these layers of paint cannot be combined with the phase-change coating of Okamoto to read on the composite material heat controller of independent claim 1 or the heat controlling method of independent claim 13.

Specifically, independent claim 1 requires a two-component composite material formed from a base material and the phase-change substance. As such, the composite material heat controller of independent claim 1 is a separate apparatus that exists independently of the object itself. This is explicitly recited in independent claim 1 in that the base material has “a surface adapted to thermally contact a surface of said object.” Clearly, the paint coatings of Babel and Long cannot be separately combined with the phase-change substance of Okamoto, as Babel and Long themselves require spraying or coating this paint directly on the object itself. As such, the paint coatings of Babel and Long do not have a surface which will read on the explicit limitation of the base material as described above.

Applicant has shown that even if combined, neither the combination of Babel and Okamoto or Long and Okamoto will read on the composite material heat controller of independent claim 1. Withdrawal of the rejection of independent claim 1 and its dependent claims 3-10 and 12 is therefore respectfully requested.

Independent claim 13 explicitly requires attaching the phase-change substance on the first surface of the base material and then “attaching said second surface of said base material to said object.” Clearly, as described above, the phase-change substance of Okamoto cannot be attached to the paint or coatings of Babel or Long and then have the paint coatings of Babel or Long subsequently attached to the object.

Again, Applicant has shown that even if combined, the combinations of Babel and Long with Okamoto do not read on the present invention as recited in independent claim 13. Withdrawal of the rejection of independent claim 13 and its dependent claims 14-20 is therefore respectfully requested.

In paragraphs 43-48, claims 1 and 11 have been rejected under 35 USC § 103 over Hasuda in view of Okamoto. Applicant respectfully traverses this rejection.

As indicated in the Office Action, Hasuda teaches a flexible optical solar reflector

that is constructed from a solar light reflecting layer 1 and a heat radiation layer 2 (see column 5, lines 55-67). The Office Action has combined this light reflecting layer and heat radiation layer of Hasuda with the variable phase substance of Okamoto. Applicant respectfully submits that there is no suggestion or motivation to combine these references.

To properly reject the Applicant's claims for obviousness in view of a combination of prior art references, the Office Action must establish that a person of ordinary skill in the art would have been motivated to combine the cited references and, in combining them, would have arrived at the invention claimed by the Applicant. In re Kotzab, 208 F.3d 1365, 1370 (Fed. Cir. 2000). A motivation to combine may arise from: (i) either explicit or implicit statements in the prior art references themselves; (ii) the knowledge of those of ordinary skill in the art that certain references, or disclosures in those references, are of special interest or importance in the field; or (iii) the nature of the problem to be solved. Ruiz v. A.B. Chance Co., 234 F.3d 654, 665 (Fed. Cir. 2000).

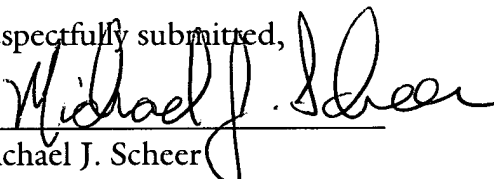
Specifically, in the Office Action it is stated that one would be motivated to make the combination because Okamoto teaches that the amount of heat radiated by a radiator panel of a spacecraft can be controlled. Applicant respectfully submits that this motivation is deficient. Hasuda does not teach a radiator panel but rather, teaches a multi-layer thermal insulator that itself performs heat control. (See column 3, lines 18-24) As such, Hasuda performs the heat control function itself and one would not be motivated to apply an additional layer of material to the fully operable thermal insulator of Hasuda. In fact, as taught in the present application and in all of the prior art, due to weight limitations, in every satellite or spacecraft, one would be motivated not to add additional layers, which would add additional weight to the structure.

Applicant therefore respectfully submits that one skilled in the art would not be motivated to make the combination of Hasuda and Okamoto, and in fact, the prior art would teaches one not to make such a combination. Applicant therefore respectfully submits that

claim 1 and its independent claim 2 are patentably distinct over the combination of Hasuda and Okamoto and withdrawal of the rejection thereof is therefore respectfully requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

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Respectfully submitted,
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